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STUDY PROJECT

AN ARMY FORCE STRUCTURE FOR THE FUTURE

BY

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United States Army

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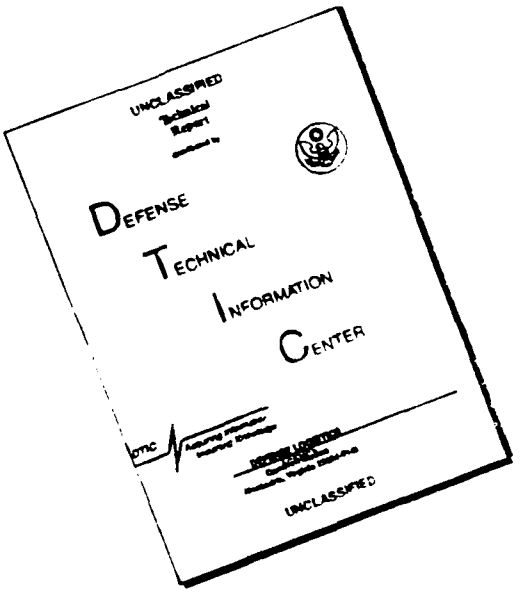

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Historically, the Army has adapted to changes in its environment by altering its force structure. Many factors influence that environment--national interests threats to those interests national strategies, resource allocations, existing and emerging technologies, and doctrine--and, thus, affect the force structure of the Army. Occasionally, however, the Army has not responded to manifest changes in its environment that demand structual modification. Today is such an occasion. In the last three years, the geostrategic environment has undergone tumultuous changes. U.S. national security and military strategies have experienced equally substantial alteration. Resource allocations have declined. And, in the last decade, technology has greatly increased warfighting capabilities at every level. Yet the Army's force structure, beyond getting smaller, is unchanged. This paper examines the numerous environmental influences that affect the Army and proposes a more vigorous conventional force structure that will make the Army of 1995 and beyond a strategic force capable of meeting national security needs.

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AN ARMY FORCE STRUCTURE FOR THE FUTURE

AN INDIVIDUAL STUDY PROJECT

by

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ABSTRACT

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INTRODUCTION

In its simplest terms, force structure determines the shape of the Army. It is the blueprint that ties policy, strategy, doctrine and resources together. Structure determines what kinds of forces make up the Army and in what amounts -- whether the Army will be heavy, light, or something in between. In that regard, structure is the most critical factor in determining the Army's capabilities and, thus, its ability to accomplish its missions.

Since the end of World War II, the environment in which the Army operates has changed significantly. The global geopolitical situation, U.S. national security strategy, Army missions and doctrine, and technology are all substantially different than they were even ten years ago, and they continue to evolve rapidly. Yet, Army force structure has remained essentially unchanged. Current U.S. national military strategy asks, "What type and distribution of forces are needed to combat not a particular, poised enemy but the nascent threats of power vacuums and regional instabilities?"[1] Urgently needed is a new force structure that acknowledges the changed strategic environment, that facilitates the Army's new force employment concepts, and that takes advantage of enhanced capabilities. This paper will examine those factors, determine where weaknesses exist, and propose a more vigorous conventional force structure that will make the Army of 1995 and beyond a strategic force capable meeting national security needs.[2]

CHAPTER I

SHAPING FORCE STRUCTURE

Figure out how to do things so you can get the maximum effect and least bloodshed.[3]

-- Sun Tzu, *The Art of War*

THE FORCE PLANNING PROCESS

Force structure is designed through a complex and poorly defined, multi-level process through which national interests, policy, and strategy are determined. The fundamental goal of the force planning process is to "translate the ends of defense policy into means."[4] Ideally the process follows a logical, hierarchical sequence in which the force planner first identifies and articulates vital national interests and the national objectives necessary to realize those interests. The planner then assesses potential adversaries' ability to threaten or influence the attainment of national goals. Based on that assessment, he next formulates national security policy, prioritizing goals and defining constraints within which the U.S. will operate. Finally, he forms a national strategy, designs a force structure that implements that strategy, and budgets resources to build the force.

In practice, the process is far from ideal. The procedures that determine interests, objectives, policy, and strategy are not clear-cut or neatly established. Resource allocation is not always based on existing policy and strategy priorities and requirements. Numerous participants, parochialisms, and political factors influence decisions and affect outcomes.

A key source of friction and incoherence in the process is the absence of agreement and consistency between the policy formulators and the resource allocators. While the President and his staff essentially determine and define national interests, objectives and security policy, the Congress allocates resources. The result is not always a coherent program for ensuring that the security needs of the nation are met. For the purposes of this paper, however, a brief overview of the process and the factors that influence it will suffice to indicate the policies and strategies that are driving force structure design today.

NATIONAL INTERESTS AND OBJECTIVES

Much has been written about the United States' vital interests, most attempting to describe the nature of interests or to determine what they are. Generally, vital interests are defined as "the country's perceived needs and aspirations in relation to other sovereign states constituting its external environment" -- interests for which the U.S. is willing to employ one or more elements of national power to protect or achieve.[5] Interests that qualify as 'vital' have varied somewhat over time, depending on the dynamics of the global security environment and the vision of the current Administration. Presently, four interests form the basis of national security policy in the 1990's:

- the survival of the United States as a free and independent nation
- a healthy and growing U.S. economy
- healthy, cooperative, and politically vigorous relations with allies and friendly nations, and
- a stable and secure world[6]

The meanings and implications of these interests are necessarily ambiguous. A more constructive definition can be found in a geographical context. In that regard, the United States has three predominant interests that are likely to endure into the next century: economic and political freedom in Europe; economic strength in the Pacific Rim area; and access to oil, primarily in the Persian Gulf region. Some might add the security of Israel to this list, but the resolve of the U.S. to engage directly in war to protect Israeli sovereignty is questionable.

These interests dictate the national objectives which, similar to the interests they support, are enduring. However, each interest can have associated with it numerous objectives which help define a broad approach to national security. While many implementation options exist for each objective, several of the objectives intrinsically require some degree of military power for realization: deterring aggression; ensuring access to foreign markets, energy, mineral resources, the oceans, and space; maintaining stable regional military balances; and combatting threats to democratic institutions.[7]

Together, national interests and objectives lie "behind and instruct the ends in the means-ends equation of grand strategy" and will provide the direction of U.S. national policy into the next century.[8] Deciding the relative 'intensity' of each interest, assessing its relative priority with respect to other interests, and formulating how each will be manifested through the national will are the tasks of the next step in the force planning process -- the formation of national security policy.

NATIONAL SECURITY POLICY

Just as national interests and objectives define the 'ends' in the ends-ways-means equation, national security policy and strategy dictate the 'ways' those ends will be implemented. National security policy sets the priorities and fixes the constraints that allow strategy to determine how and when the three elements of national power -- political/diplomatic, economic, and military -- are used to achieve national objectives.

Policy/strategy formulation is not a clean, well-defined process. Numerous dynamic factors, internal and external to the U.S., affect it; perhaps the geopolitical environment exerts the greatest influence. Additionally, the three elements of national power used to implement policy are interrelated and interdependent -- the use of one impacts the others, at times significantly.[9] Each of these influence and add complexity to the formulation of policy and strategy.

The geopolitical environment has recently undergone significant change -- the end of the Cold War, the disintegration of the Soviet Union, the reunification of Germany, and the impending European economic integration -- and will continue to evolve at a rapid rate. Many of the Cold War era threats to the U.S. have disappeared. As a result, the United States today faces an interest-threat mismatch. Where we have interests, we lack threats; where we have threats, we lack interests.[10]

In Europe, the collapse of the Soviet Union appears to have removed all realistic threats and virtually guaranteed a secure environment. However, the United States cannot and should not ignore the military capabilities of the former Soviet Union. Prudence dictates that close scrutiny of events

within the Commonwealth of Independent States (CIS) be maintained for any hint of a resurgence of authoritarianism or global activism. The CIS may not pose the threat to U.S. interests that the Soviet Union did and therefore, may not deserve the same policy consideration, but "it [still] remains the only [power] that could destroy the United States" and pose a threat to Europe.[11]

CIS nuclear weapons are and will remain a concern to the United States and will therefore influence policy formulation. But they affect U.S. conventional force design only to the extent that efforts to counter them divert resources away from conventional forces. CIS conventional forces, on the other hand, present a greatly diminished threat compared to the past, "even if one concentrates on capabilities and puts aside the enormous change in intentions."[12] The severe fragmentation of the once powerful Soviet Army (no CIS Army exists as such, since several states have opted to organize their own armed forces) and the recently announced 85% cut in the Russian defense budget considerably lessen the ability of the CIS or any of its member states to project conventional forces beyond their international borders in the foreseeable future.[13] Absent significant changes, the CIS and its military power will be no more than secondary considerations for the policy formulator and force planner.

Around the Pacific Rim, few threats are discernable. South Korea and Japan are the foci of U.S. interests in the region -- Korea for historical, moral and economic reasons, Japan more for purely economic reasons. But do credible threats exist? North Korea may be today's threat of choice; but without Soviet backing, it is unlikely to invade of South Korea. Furthermore, South Korea, much more capable of defending itself now than at any time in the past, will require less security assistance from the U.S. in the future.

The only realistic threat against Japan comes through the Persian Gulf, from which Japan imports the bulk of its petroleum needs and upon which Japan's economy depends. The wild card in the region may be China which is just beginning to acquire the military equipment necessary to project forces beyond its borders.[14] Although much of its acquisition program may be in response to its territorial disputes with Vietnam, China may be tempted to use its military's new strategic mobility for purposes that ultimately threaten US interests. Additionally, China has professed conditional backing of North Korea should a conflict erupt on the peninsula, a situation which may embolden North Korea in its dealings with South Korea.

In the Persian Gulf, access to oil will remain a vital U.S. interest, not only for America's own economic well-being, but also for its allies. But oil's importance will begin to wane over the next decade as it is increasingly replaced by alternative energy sources and as conservation measures take hold in industrialized nations. As oil's importance declines so will the probability that the US will fight for it. Until that probability reaches zero, however, maintaining a regional balance of power within the context of regional collective security arrangements will remain the United States' best approach to avoid future conflict in the area. That, combined with the deterrent effect of the Gulf War, will serve to stabilize the region into the next century.

The United States' national policy for the next decade, and probably longer, will be profoundly affected by the end of the Cold War. The dampening effect that the Cold War had on conflict is gone. Without it the U.S. should "expect more rather than less conflict in the future."[15] Such conflicts will be regional in nature and will occur with little or no warning. In recognition of this pattern of growing localized instabilities, America's global

activism will continue as a matter of policy, but now with a more regional focus.

Violence and instability exist in many regions of the world, almost all of them in the Third World. Current policy accurately perceives the greatest threats as regionally centered, involving "ethnic antagonisms, national rivalries, religious tensions, spreading weaponry, personal ambitions and lingering authoritarianism."[16] Although the next war America fights will probably be in the Third World, that fact will be of little help to policy makers or force planners since the Third World contains such a diversity of countries, cultures, and capabilities. Additionally, the United States' interests in the Third World are generally much less compelling than our interests in Europe and the Pacific Rim. That serves to further complicate the policy maker's task of determining exactly where and when those interests will demand American armed intervention. Without the focus provided by the Cold War, policy faces the danger of trying to 'cover all bases' and, thereby, of becoming ineffective everywhere.

One benefit of the demise of the Cold War, however, is that when regional conflicts do occur, they will be "less likely automatically to be perceived as part of a permanent -- frequently dangerous, sometimes violent -- global competition" between the U.S. and the USSR.[17] Such a change in perceptions may allow greater international cooperation to resolve disputes, but it may also result in increased U.S. involvement in disputes or conflicts as part of an alliance or coalition. This does not automatically mean military involvement; but, in an increasingly armed and violent world, military action will probably be more the rule than the exception.

The Third World presents four additional areas of future concern for the U.S.: terrorism; drugs; and the proliferation of nuclear, biological, and

chemical weapons, conventional weapons, and ballistic missiles. To varying degrees each of these issues will affect U.S. security not only because they can vary in intensity and location, but also because they may ultimately require a military solution. They will not, however, significantly affect force design since they will continue to be secondary missions for the military. For policy makers, however, they will further cloud the environment to which U.S. policy must respond.

A final aspect of policy formulation involves risk assessment. Risk, "the difference between perceived threats and the ability (capabilities) to negate those threats," is considered at all policy levels.[18] Risk thus is closely tied to assessment and perception of threat and to resource allocation.

In the current environment of fewer threats and declining resources, with fewer federal dollars available to address all national problems and priorities, assessing risk is critical to evaluating and choosing among the various policy options available. As a result of the assessment, specific policy risks are defined, a strategy is formed, and resources are allocated to initiate "action that maximizes the use of resources to minimize those risks."[19]

Threat assessment in today's geopolitical environment is becoming more complex and, accordingly, more difficult. It may be easier nowadays to determine where a threat is not present, rather than where one is. And once a threat is located, characterizing it is, again, difficult. The inability to define threats may add to risk by inhibiting the formation of policies or capabilities to deal quickly and effectively with them when they appear. Also, a policy developed to counter one threat may not be effective against another. Thus, the current environment harbors two dangers for U.S. policy: that it will not recognize substantial threats and, therefore, not plan for any; or that it will

assess and prepare for the wrong threat. In any case, once threats are identified, resources are allocated in accordance with national priorities to deal with them.

Resource allocation is closely tied to threat perception, but not necessarily to the threat perceived by the national policy makers. Allocations are primarily influenced by two factors: the recommendations of the President, and the views of the members of Congress. These influences, however, are often more disparate than complementary. Since it is frequently Congress' perception of the threat and of domestic priorities -- and not the President's recommendations -- that drives resource allocation, significant differences in their respective threat perceptions can increase national security risk.

Furthermore, threats to America's national interests will almost always "exceed total national resources [available] to negate them."[20] There is a clear and compelling connection between risk and resource availability -- fewer resources mean greater risk. Indeed, throughout its history, the United States has never been willing to commit sufficient resources in peacetime to realize all of its national objectives. Today is no exception. With competition from domestic priorities increasing, the amount of the federal budget dedicated to U.S. national security will decrease. As a result, overall national capabilities, especially military capabilities, available to promote and defend vital interests will be reduced, increasing the amount of risk that must be accepted in the overall strategic equation.

However, one aspect of security policy that will work to reduce risk is development of alliances or formation of coalitions in future military endeavors. The U.S. cannot, however, rely solely on such means to reduce its future military requirements. While alliances and coalitions may reduce

the overall military requirements of the U.S., in most instances they will never fully obviate the need for U.S. forces.

For the foreseeable future, then, the national security policy and strategy will continue to adapt to the complexities and the uncertainties of the changing geostrategic situation. As a result, to "hedge against the uncertainties of the future," national policy will probably remain vague and adaptive.[21] That ambiguity and adaptability will strongly influence the next step of the force planning process -- the national military strategy.

NATIONAL MILITARY STRATEGY

National military strategy is defined as "the art and science of employing the armed forces of a nation to secure the objectives of national policy by the application of force, or the threat of force."[22] Through a hierarchy of objectives, concepts, and forces, military strategy defines the 'ways' in which the objectives of national policy and strategy will be implemented by using the military element of power.

National military strategy has recently undergone major revisions commensurate with the changes in national security policy and strategy necessitated by the evolving strategic environment. Three factors are salient to those revisions: the collapse of the Soviet Union, the increases in military power throughout the world, and the decrease of national resources (funds) available for defense.[23]

Emerging U.S. military strategy must reflect the "fundamental transformation of the global strategic environment" which has introduced a significant amount of uncertainty into strategy formulation and force planning.[24] American policy makers and force planners must recognize that

"the specific challenges facing our military in the 1990's and beyond will be different from those that have dominated our thinking for the past 40 years."[25] The end of the Cold War has effectively eliminated America's primary post-World War II adversary -- the USSR -- and permanently altered the global strategic terrain. Accordingly, the U.S. must break out of the paradigm of the last four decades in which military strategy has been controlled by "the Pearl Harbor syndrome," the idea that we must maintain sufficient forces to "fight and sustain a 'come-as-you-are war' in response to a massive surprise attack for which we have only short tactical warning."[26]

The primary challenge to forming a new military strategy is the lack of clearly defined threats to national interests. Although strategy formulation is possible absent definitive threats, without the direction that identifiable threats give strategy, the tendency is to attempt to be ready for all eventualities. As current military strategy states, America's new enemy, the contemporary threat, "is less an expansionist communism than it is instability itself."[27] But how does the military prepare itself to fight instability? The U.S. must be wary of succumbing to the 'be-all, do-all' syndrome in its military strategy, heeding Frederick the Great's timeless warning, "he who attempts to defend everything, defends nothing."

In response to the ambiguous threat situation, the United States has "developed a new defense strategy that provides a conceptual framework for our future forces." Like the defense policy that precedes it, this strategy "focuses . . . on regional contingencies and on sustaining the forward military presence in peacetime necessary to deter the outbreak of regional wars."[28] It provides the 'hedge' that the national security policy requires against the "uncertainties of the future" by moving the military into a role of

"more active engagement throughout the world that protects and advances US interests."[29] Threats may emerge in unexpected forms or from unforeseen locations, and the U.S. must have the ability to respond.

As the international security picture grows in complexity, it will be "increasingly difficult to predict and estimate the circumstances under which U.S. military power might be employed."[30] In order to overcome that uncertainty, the U.S. must retain flexibility in its military strategy. In an environment of unchanging objectives and declining resources, strategic flexibility can be obtained only by redefining and revising U.S. strategic concepts. Choosing concepts that will span the void of uncertainty generated by today's churning global environment is essential if strategic risk is to be minimized. As a result, today's revised strategy, in addition to revalidating the recurring requirements for deterrence and reconstitution, centers on two innovative concepts: forward presence and crisis response.[31] Together, these two key conceptual changes provide the needed strategic flexibility and afford important direction for force planners.

Forward presence commits the U.S. to maintaining some military forces in areas where presence is necessary to protect important national interests. It will take the form of "forward-deployed land and air forces, pre-positioned equipment afloat and ashore, periodic joint and combined exercises, security assistance operations, and carefully cultivated nation-to-nation relationships."[32] This concept complements crisis response as it increases force responsiveness by placing hard-to-deploy equipment and initial stockages of war materiel closer to potential conflict areas. For the Army this concept allows for faster deployment of some heavy units by placing the units or their equipment nearer latent regional conflict areas.

Crisis response, "the heart of the new strategy," envisions the "projection of power from within the continental United States to trouble spots around the world."[33] Power projection, the centerpiece of crisis response, requires force structures that emphasize flexibility and deployability. Projecting land forces usually means deployment. And in the context of crisis response, this translates to rapid deployment of combat capable, versatile forces. Additionally, once deployed, forces must be readily sustainable in areas "where prepositioning of equipment will not always be feasible, where adequate bases may not be available . . . and where there is a less developed industrial base and infrastructure to support [them]."[34]

These strategic concepts have serious and far-reaching implications for the roles, missions, and functions of the Army. Just as they reflect the evolving security environment, so do these concepts define new and challenging tasks that the Army must execute to support evolving national security strategies. How the Army responds to these new tasks will determine whether it succeeds or fails on future battlefields. Perhaps the most important manifestation of the Army's response to these challenges can be found in the final product of the force design process -- the force structure of the Army.

CHAPTER 2

A FORCE STRUCTURE FOR THE FUTURE

By carefully designing our forces . . . we can limit the degree of risk[35]

GEN Carl E. Vuono, 1991

FORCE STRUCTURE DYNAMICS

The most basic function of force structure is to determine the optimum shape of the resources that will be used to implement the national military strategy. Force design must be forward-looking, with an innate ability to negate the potential threats of the future as well as the probable threats of the present. The Army's structure must mesh with the missions, roles, and functions that are evolving from the revised strategic concepts. At the same time, structure must facilitate the fundamental principles that govern military organization and operations -- economy of force and unity of effort.[36] When functions, principles, and structure are properly balanced, a synergistic, force-multiplying effect results. And a fully capable Army is fielded.

The Army's fundamental role within the national military strategy is to generate land-based combat power in order to deter conflict and, when necessary, to conduct successful joint/combined military operations across the operational continuum in order to terminate hostilities on terms favorable to the U.S. and its allies. The challenge the Army faces in the next decade is to maintain its capabilities -- primarily its combat power and the ability to project it -- with significantly fewer forces. This means achieving maximum effectiveness with the resources allocated.

The Army of 1995 and beyond will be smaller than it is today, but that fact alone does not dictate restructuring. To a force planner the Army's final end strength is largely irrelevant, since it does not change the basic force planning goal -- the goal of optimizing appropriate capabilities within resource constraints. And while declining resources do not necessitate force redesign, they do make restructuring more imperative because a smaller Army will be inherently less capable -- less capable of executing numerous tasks simultaneously or of covering as much territory.

But what are those 'appropriate capabilities' that must be retained and maximized? The answer lies in the strategic concepts of the national military strategy. While all of the concepts point to the Army's future tasks, one concept -- crisis response -- provides the impetus for structural changes. The key to crisis response can be found in the four critical qualities General Vuono cited: "versatility, deployability, lethality and expansibility."[37] Crisis response demands a force with capabilities that optimize those qualities -- a force that can deploy rapidly anywhere on the planet, that can project overwhelming and decisive combat power in myriad environments, that is easily sustainable, and that can be readily expanded into a larger force. Those four qualities set the critical force parameters that make up the framework upon which force structure will be built; they determine the specific capabilities required to execute tasks derived from the strategic concepts. Accordingly, retaining and maximizing those qualities must be the primary goal of the Army's force planners.

Fewer future forces will provide a much smaller margin of error to compensate for any strategic miscalculations or oversights. Indeed, General Vuono's statement in 1991 that a smaller Army involves the "acceptance of greater national risk" is becoming increasingly true as the Army

downsizes.[38] But the Army of 1995, as currently envisioned by its leadership, will contain significant levels of unnecessary risk -- risk the Army and the nation do not have to accept. There are several reasons for this.

First, no substantive changes are planned for Army force structure although the national military strategy and attendant strategic employment concepts have undergone significant change. Granted, there has been much discussion about "reshaping" the Army. The current Army Chief of Staff, GEN Gordon Sullivan, has articulated the Army's commitment to maintaining capability with the slogan "No More Task Force Smiths," the Army's new rallying cry. Similarly, President Bush, in his 1991 National Security Strategy, stated the need for "a smaller and restructured force."[39] And officially the Army recognizes that it must remain "committed to a comprehensive plan for reshaping the Total Force to accommodate recent changes in national military strategy, the evolving international security environment, and domestic fiscal realities."[40]

True, the Army is deactivating units and changing unit alignments. The 3rd Armored Division and the 8th Infantry Division are gone. Other units are moving (the 5th Infantry Division (Mechanized) will move from Fort Polk to Fort Hood) and changing Corps affiliations (the 1st Cavalry Division will realign from the III Corps to the XVIII Airborne Corps).[41] But beyond the rhetoric, the reductions, and the realignments, there has been no real restructuring. Army force structure will remain in the future at about the same proportion of heavy and light units as it had in the past. The result is an Army that is being reshuffled, rather than reshaped. An Army that, by 1995, will be little more than a smaller version of what it was in the late 1980's.

Second, the Army today is facing a growing chasm between threats and capabilities. While the reductions in the perceived and potential threats of the future are driving the decreases in the Army's size, they are not significantly influencing the Army's structure. The changing threat environment has caused the Army to redefine its critical force qualities, but it has not prompted any structural changes that would mold the 'appropriate capabilities'.

The dichotomy between the new force quality requirements and the lack of structural change can be explained in part by the Army's replacement of the threat-based force planning used during the Cold War with a capabilities-based approach. Capabilities-based design does not consider threat characteristics or resource constraints. Rather, it aims to determine, based on rather arbitrary illustrative planning scenarios, the capabilities that the Army will need to fulfill its tasks and missions. Such an approach may cause capability requirements to exceed available resources or it may emphasize the wrong capabilities. In such a design system, capabilities become the 'ends' of force design rather than the 'means' by which force design works to negate threats.

Rather than use one method of force planning to the exclusion of the other, the Army must adopt a more balanced approach -- an approach that, by dealing with the multiple factors that affect force design, reduces the overall level of risk in the resulting structure. Such an approach considers several factors -- general threat characterization, resource constraints, doctrine, and employment methods within the framework of the strategic concept of crisis response. Each is important in optimizing the final structure.

In its quest to characterize future threats, the Army's most formidable challenge is adequate preparation to counter those threats -- threats that are more uncertain and unpredictable than during the Cold War and that will be distinguished by "proliferating actors and military capabilities at all levels" and in many varied locations.[42] Knowing in advance who we are going to fight, however, is not as essential as knowing what range of capabilities opponents may have and, conversely, what capabilities they will not have. But while the capabilities of potential regional adversaries cannot be precisely characterized, they can be described in general ways that will serve to guide force planners in determining the types of forces that will be needed in the future. Generally, threat forces will:

- be smaller and more dispersed geographically than those confronted during the Cold War

- possess not large tank armies, but armored forces composed of from over 1000 tanks to only a few that are one to three generations behind U.S. tanks

- possess substantial sophisticated weaponry and equipment that is, in general, technologically inferior to that of the U.S.

- be more poorly trained and equipped than U.S. forces

- possess small air forces not capable of maintaining air superiority against U.S. air forces.

Additionally, regional crises will most probably occur in distant areas of the globe with poorly developed infrastructure, which will magnify requirements for mobility, sustainment, and communications.

Resources define the constraints that dictate the limits of force size, and, to a large degree, force capabilities. The smaller Army of 1995 will certainly be less capable than it is today, but that loss of capability need not

be proportional to the decrease in end strength. Prudent force restructuring can enhance capabilities as end strength levels decline, so the final product can have proportionally more capability that it otherwise would have. Capability enhancement can be accomplished by changing the composition of the Army -- that is, the types, quantities, and functions of units within the Army. In this manner fewer units in a smaller force can retain significant capabilities. Such a method also indirectly determines which weapons programs will be sustained within resource allocations and may, at times, demand new weapons that support the changed structure and revised employment concepts.

Army doctrine by 1995 will have evolved to AirLand Operations (ALO). That doctrine, as stated in TRADOC Pam 525-5, AirLand Operations, echoes the Army's roles and tasks under crisis response to "deploy rapidly, . . . apply maximum combat power against the enemy center of gravity, and . . . destroy the enemy's critical elements and will to resist."[43] Under ALO the future battlefield will be a fluid, non-linear environment with operations focusing on the enemy, rather than on terrain. Units will operate dispersed over a large battle area, massing only when necessary to fight. Precision, control, speed, and mobility will be critical to success in such an environment.

Additionally, ALO acknowledges the Army's strategic transition from a forward deployed/forward defense force to a force of crisis response and forward presence. That transition places a premium on a force structure that facilitates mobility, agility, and command and control, one that can rapidly deploy and concentrate combat power.

Crisis response, the key strategic concept that will dictate how and when most Army forces are used in the future, represents a significant

departure from the way the Army has been employed in the past. With emphasis on a force that combines deployability, lethality, mobility, and versatility, crisis response provides significant direction to force planners. Accordingly, the Army's force structure should reflect those qualities to the greatest degree possible. But it doesn't. And, if present trends continue, it will not.

Instead, the structural status quo will continue well into the future. Heavy units, quite lethal and, to a lesser degree, versatile, are not very deployable nor easily expanded. Light units, on the other hand, are readily deployable and expanded, but they are clearly not so lethal, nor very versatile. The Army has committed itself to two structural poles -- one is deadly, but cannot be easily moved; the other is highly deployable, but lacks combat power and lethality. Such polarization limits options and responsiveness. Thus it increases risk at every level -- strategic, operational, and tactical. A balanced approach to structure planning can eliminate that polarization and produce a force design that not only optimizes 'appropriate capabilities' but also facilitates future structural evolution in response to a changing security environment.

The third factor that contributes to unnecessary structural risk is the Army's inability to exploit new technologies quickly. Although technology permeates war "to the point that *every* single element is either governed by or at least related to it," the Army has missed opportunities to "harness . . . technology to the service of war."[44] Technological advances are rapidly expanding warfighting capabilities through improved weapons, communications, and information gathering and processing, creating what Alvin Toffler calls the "Third Wave" of warfare -- warfare that is "knowledge driven, . . . [with] emphasis on rapid deployment, mobility, maneuver,

surprise, and interdiction, . . . [where] precision and speed are the keys to success."[45] Even the CIS's military sees technology as a force that "could negate the more traditional measures of military power and revolutionize combined-arms concepts."[46] They project future wars as "technological operations" -- short conflicts "characterized by a massive use of technology."[47] But the U.S. Army has not and is not planning to fully incorporate those "qualitative advantages [that technology] can bring to bear on conflicts."[48]

Today's commander has an unprecedented ability to see the battlefield in real time, to locate quickly and accurately both friendly and enemy units, and to transmit and receive orders and information instantaneously. Additionally, weapons have significantly more lethality, accuracy, and range with more improvements on the way. But these are improvements in individual systems and not in the force structure that synchronizes and organizes them. Missing is the synergism that can magnify the aggregate of those individual improvements and produce a force that is greater than the sum of its parts.

Despite quantum leaps in technology and capabilities, the Army's structure has not taken advantage of those improvements. Today's force structure is, in fact, very little changed from that of World War II. Indeed, the Army's basic command and control structure and its unit composition are essentially the same as 30 years ago. The Army must redesign its structure to synergize the advantages afforded by advanced technology.

The final element that adds risk to the current force structure is the new basing concept of Army forces. The concept of forward presence, part of the response to reduced threat perceptions, requires that the Army retain the bulk of its forces in the continental United States (CONUS). But during

most of the Cold War about half of the Army was based overseas. In the near future, less than one quarter will be thus deployed. On the surface this may appear to reduce risk, especially for those units moving into CONUS, because they will less exposed to terrorism and no-notice attack. But the strategic level of risk actually increases -- a direct result of the Army's polarization between heavy and light forces.

The forces that are being moved to the CONUS are the Army's heavy forces -- those that are neither easily nor rapidly deployable. From their new bases they will be farther from potential trouble spots. Thus they will have a reduced ability to influence crises. Additionally, most heavy units in CONUS are not based near seaports, further extending the time it will take for them to deploy. What the Army is left with are several light infantry divisions that can get to trouble spots quickly, but which have little combat power to influence any action. Indeed, moving light units into a trouble spot with an adversary that outnumbers or outguns them may increase the risk of escalation to nuclear weapons in order to prevent their annihilation. Risk is therefore not reduced, but heightened. While such an example is extreme, it is not completely improbable.

Each of these elements adds to an unacceptably large risk in the Army's current and projected force structure. Several structural changes are urgently required. Taken together, those changes will reduce risk by making the Army more capable overall and increasing its ability to respond effectively to the full spectrum of employment possibilities.

STRUCTURAL CHANGE

There are two fundamental ways to alter force structure -- change command and control (C2) structure or change force composition. The Army

needs to do both. Current Army force structure has three significant shortcomings -- it is too hierarchical to be responsive, too bulky to be versatile, and too polarized to be effective. But each shortcoming can be overcome to restore the Army's effectiveness and to partially offset the effects of the projected decreases in force size.

Changing the Army's command and control structure can optimize responsiveness and versatility. By eliminating the division command echelon and restructuring brigades the Army can take full advantage of the massive C2 capability increases afforded by technological advances. Additionally, these changes will allow the Army to assign its units fewer diverse missions rather than continue its multiple-mission, all-purpose force concept -- a concept that increases the risk of unpreparedness as the number of units declines and as the number of missions remains constant or increases (as is happening today).

Similarly, overall force effectiveness can be maximized by two changes in force composition: adjusting the composition of existing heavy armored and light infantry units and adding light armored forces to the Army's structure. The Army of 1995, as envisioned by its leadership, is staking its capability and credibility on only two force types, heavy armored and light infantry. Capability enhancements will center on improving the mobility and firepower of those types of units.

But minor structural changes, while improving the effectiveness and versatility of the heavy and light forces, will not enable them to fulfill the numerous requirements contingent to crisis response. For that purpose, the Army needs a force that is light enough to deploy rapidly but still lethal enough to handle all but the most intense conventional combat environments. That force is light armor. Light armored units will be formed

to bridge the substantial capabilities gap between light and heavy forces, thereby reducing force polarization and providing units that are not only lethal and survivable, but also rapidly deployable.

COMMAND AND CONTROL STRUCTURE

Efforts to streamline the C2 structure last occurred in the early 1970's when the Army removed the field army from its command structure in order "to increase the speed of actions by elimination of an echelon of command."[49] Despite that precedent and the enormous technological gains in command and control systems and capabilities made in the two decades since then, the Army has retained unnecessary C2 structure which continues to slow responsiveness and erode versatility. By definition, command and control is successful when the Army's leadership in battle "functions more effectively and more quickly than the enemy."[50] But the Army, by failing to take full advantage of the efficiencies afforded by technology, has lost some of its effectiveness and quickness. To rectify that situation, the Army must optimize its command and control structure, thereby maximizing responsiveness and versatility. Those improvements can be realized with two structural changes -- eliminating the division as a command and control level and restructuring the brigade to become the basic unit of tactical operations.

Eliminating the division command echelon -- placing brigades directly beneath corps -- will provide the Army with two important enhancements: a streamlined command and control process that reduces response time without sacrificing control, and an improved force versatility, the result of distributing missions over a larger unit base. The change is possible because a single commander today, using the significant capabilities of new

technologies, can directly control more units than was possible only a few years ago. Several factors influence that expanded control capability.

The first and most influential factor is technology. The technological advances of the last 20 years have made the division layer of command and control redundant and unnecessary by giving the corps commander "an almost exponential surge in [his] capability" to command and control forces.[51] For the first time in the history of warfare, real-time control of forces anywhere and everywhere on the battlefield is possible. Further, present and planned technological innovations will greatly reduce the corps commander's decision cycle by expanding his ability to see, manage, and control the battlefield.

Using systems like the Joint Surveillance Target Attack Radar System (JSTARS), the Global Positioning System (GPS), the Enhanced Position Location Reporting System (EPLRS), a variety direct-link satellite imaging systems, and unmanned airborne vehicles, the corps commander can determine instantly the locations and movements of friendly and enemy forces. In battle, knowledge is power. And knowing where friendly and enemy units are generates tremendous power and control for commanders.

Similarly, improved communications systems have added capabilities that again greatly enhance the corps commander's ability to command and control forces. Mobile Subscriber Equipment (MSE), the new corps-wide communications system, connects the corps commander with any of his commanders down to battalion level directly from his tactical vehicle regardless of their respective locations on the battlefield. Other radio systems, such as the Single Channel Ground and Airborne Radio System (SINCGARS) and the Improved High Frequency Radio (IHFR), have proliferated vertically and horizontally through every level of command,

offering a wide array of C2 capabilities and systems that give the commander greater ability to control the battlefield.

Tying all of these information gathering and communications systems together is a collection of increasingly powerful computers. Computers have been revolutionizing the command and control process. Two new systems coming on line -- the AirLand Battle Management Program (ALBM) and the Lower Echelon Distributed Command and Control System (LEDC2S) -- will provide quantum increases in C2 capabilities. The ALBM applies artificial intelligence to the corps-level planning process, providing the capability to produce multiple courses of action and operations orders.[52] The LEDC2S provides "real-time situation development and targeting to brigade level."[53] Both allow orders to be generated and transmitted to subordinate units in a fraction of the time they took only a few years ago. They also enable vast amounts of raw data to be quickly analyzed and processed to aid the commander's decisionmaking. As computers and communications systems increase in capacity and speed -- and they will -- processing times and associated decision-cycle times will continue to decrease.

In modern warfare a short combat response cycle -- the time it takes for a force to react to new information or a changing situation -- is critical to success on the battlefield. The length of the combat response cycle is determined by several factors: the duration of the decision cycles of the various headquarters and command levels between where the information enters the system and the executing force; the technology available to analyze, process, and disseminate the information; and the capabilities of the executing force to respond. The recent exponential increases in technological power have affected the all three factors, greatly reducing the length of the response cycle. But high technology systems, although fast

and efficient, will never make up for the time lost passing information and issuing orders through extraneous command levels.

Producing orders at each headquarters and command level takes time. People are involved at every level and, since humans are slow, each level of command structure slows the C2 process and lengthens the response cycle. Indeed, the operations order production process at division level can take from six to twelve hours. Removing the division layer eliminates one layer of humans and removes the delay between corps and brigade, thereby shortening response time. Some may argue that the time saved by eliminating the division will just be used up by corps planners, since plans and orders will have to be more detailed (for more maneuver units). But most corps planning is already too detailed and their orders too bulky. A greater number of maneuver units may, in fact, have the opposite effect on plans and orders, causing the corps to simplify its planning, become less detailed, and produce less complex plans and orders. Overall, however, time will be saved and the combat response cycle shortened dramatically.

The second factor, a concern that always arises when proposals are made to streamline C2 structure, is the limitations of the human span of control. Elimination of the division will mean that corps commanders may have to control as many as six to eight maneuver units in addition to the normal array of corps level units and staffs. That high number tends to go against the consensus within the Army, which considers the optimum span of control to be three to five subor ates, with three being the most "desirable."[54]

But that consensus has no basis in fact. Anecdotal evidence suggests that span of control can and does exceed the three-to-five standard. During the Korean War, when C2 systems were far less capable and numerous,

regimental combat teams "often controlled as many as five or six battalions of armor and infantry."[55] In fact, the few studies that have been conducted in the last decade found that today's typical corps commander directly controls as many as 35 subordinates. While that number cannot be translated into a specific number of subordinate units, it does indicate that commanders at higher levels possess superior intellectual capacity and, accordingly, a potential span of control greater than five.[56]

However, because span of control is such a critical element of command and control, it cannot be dismissed arbitrarily. Rather, in accordance with the structural changes and composition changes proposed in this paper, some command structure changes are also necessary. At corps level, with the increase in combat, combat support, and combat service support units, the deputy corps commander will be replaced by two assistant corps commanders, one for support and one for maneuver, similar to the division command structure. The assistant corps commanders will be major generals. Additionally, the corps G-3 will be a brigadier general in order to bring additional experience to the position and to allow former brigade commanders to fill the position. Finally, due to the larger size of the proposed brigades and the greater autonomy of each unit, all maneuver brigade commanders will be brigadier generals.

Tied to the span of control issue is the question of the number of brigades that will replace divisions. The current mind set is that what used to be a four-division corps will now become a twelve brigade corps -- too bulky for effective control. But the brigades formed in place of the divisions will be larger than divisional brigades, so there will be fewer than originally projected. Each brigade will contain four maneuver battalions, plus portions of the combat support and combat service support units normally found in a

division. Accordingly, since restructured brigades will be more capable than corresponding divisional brigades, the replacement ratio of brigades to divisions will be about 2:1, meaning that a corps will normally control only six to eight brigades.

The final factor requiring consideration are current Army C2 practices that constitute de facto elimination of division level control structures. Such de facto restructuring is currently happening in two critical areas -- logistics and communications. The change in logistical practices was most evident during Operation Desert Storm, which saw a "shift from centralized resupply points toward a system in which supplies [were] brought forward to maneuvering combat elements." As the result of that shift, forward support battalions will be reconfigured in order to dedicate "one to each combat brigade," effectively by-passing division support echelons.[57]

Movement to a less cumbersome logistical hierarchy is also dictated by the Army's new doctrine. The fluid, non-linear battlefield envisioned by AirLand Operations demands the "unweighting of . . . echelons of logistic responsibilities so . . . organizations can move more quickly, with logistics functions concentrated at corps and brigade."[58] These examples clearly illustrate that, over the last several years, logistics doctrine, as well as practice, has been moving away from the brigade-division-corps hierarchy and toward a direct brigade-corps association. With the echelon at division removed, supplies and equipment needing repair can flow through the system faster and get to the users more quickly. The payoff is increased speed of resupply, rearming, and repair.

Similarly, the command, control, and communications (C3) system within the corps, MSE, has effectively eliminated the requirement for a

divisional C3 segment. In the past, when corps and division had different C3 systems, unified control of all corps C3 systems in the corps area was not possible or practical. Today with MSE, a fully integrated corps C3 system, the corps controls and allocates signal assets for the entire corps area. Divisions are little more than trainers and maintainers, a task that can be handled equally well by brigades. The demise of divisions will affect corps C3 only in positive ways. Thus two of the more critical battlefield functions, logistics and C3, have already moved away from divisional structure and toward a direct brigade-corps interface.

An additional combat support/combat service support (CS/CSS) concern that is overcome to a large degree by the corps/brigade structure is deployment sequencing. When divisions deploy, the tendency is to move combat forces first and CS/CSS later. With three brigades to deploy in a division, that can translate into long delays for support units and problems in the deployment area when needed support is not forthcoming. The brigade structure would alleviate that problem, since each brigade would deploy with its organic CS/CSS. Thus, support units would arrive earlier in the flow and support activities would begin sooner.

Eliminating divisional echelons, however, affects more than just the logistics and C3 structures. It also affects the other combat, combat support, and combat service support command echelons that are found within divisions. The division artillery headquarters will be eliminated, its functions absorbed by the corps artillery headquarters and the corps artillery brigade. Divisional artillery units will be assimilated at both corps and brigade levels. Similarly, the division aviation brigade will be dropped, its functions absorbed by the corps aviation brigade and its units incorporated at both the corps and brigade levels. The functions of air defense artillery,

engineer, military intelligence, chemical, and military police will be absorbed within brigades, normally by smaller versions of divisional units. In every case, however, more capable systems and equipment are programmed to come on line within the next few years. That will result in increased overall combat and CS/CSS capabilities, adding to every commander's ability to shape and influence the battlefield with more speed and precision than ever before possible. But speed and precision are not only the only benefits arising from elimination of the division -- improved force versatility is another.

In the emerging environment of uncertainty, the Army faces an indefinite, but large number of employment possibilities, too many to be prepared to meet effectively. But with a force that may decline to ten divisions, the tendency is to assign multiple, diverse missions to every division. Trying to do too much detracts from overall force and individual unit versatility. As Michael J. Mazarr has observed, "forces fight those wars best for which they are trained most. . . . [I]t is not economy of force to maintain general-purpose forces that might be unsuitable for the conflicts that do arise."[59]

The Army's bulkiness -- having most of its combat power in just twelve divisions -- detracts from its ability to train for and meet all possible missions. That condition is especially critical in the Army's 'Contingency Corps' -- the XVIII Airborne Corps -- which has the mission of supporting myriad possible contingencies with a five division force. In the long run that may foster disaster, since "attempts to combine great versatility in repertories with rapid responses may simply foster operational dilettantism -- with the appearance, but not the reality of economies of force."[60] Given the smaller force of the future, possibly as few as ten active divisions, the Army

will be forced to continue its operational policy of assigning multiple, but widely varied missions to single units (in this instance, divisions).

Another detractor from versatility is the tendency of all-purpose forces to "have difficulty adapting rapidly to new conditions and the demands of specific missions."[61] Units that live and train in one environment and are adapted to a specific climatic condition normally have problems in different climates, especially if the difference is great and change is sudden (as it often is during rapid deployment). Additionally, every unit has limited training time; therefore, it will tend to train to its primary mission to the detriment of other missions.

At the National Training Center (NTC) and the Joint Readiness Training Center (JRTC) the Army trains brigades, not divisions. But those centers represent only two of numerous critical mission areas that brigades must be prepared to execute. Brigades learn the lessons and the "demands of specific missions", but divisions, that typically do learn those lessons, fight the wars. Since brigades train at the two Centers on their own, there is a loss of the 'habitual relationship' synergism normally obtained from division-brigade interactions during training. Additionally, a brigade may spend half of its annual training time preparing for, conducting, and recovering from an NTC rotation, leaving little training time for other missions.

A brigade oriented structure, as proposed in this paper, would add versatility by spreading missions over a larger number of smaller units. Rather than having every unit attempt to be ready for every possible mission, each unit would have a primary mission on which it would concentrate its efforts, followed by secondary and tertiary missions that would be accorded less attention. Concurring with this concept William

Kaufmann asserts that, "large military units are like elephants in a ballet company. Their repertories are bound to be limited and they are not very adept at rapid change."[62]

Smaller units provide more versatility. A brigade with a primary mission of desert warfare would train at the NTC and would not, thereby, lose overall mission capability by spending a large portion of training time on that one area. While focusing mission assignments will limit each unit's flexibility, Michael Mazarr argues that "the basic level of flexibility in this approach comes from the spectrum of force structure, not from units that are themselves totally flexible."[63] Where each division would have perhaps three or four critical missions that compete for training time, brigades would have only one or two missions vying for about the same amount of training time.

An Army with twice as many base units, brigades in place of divisions, would, therefore, be more versatile and able to respond to crises with a greater probability of success.[64] Additionally, brigades would increase the United States' flexibility when responding to treaty or alliance requirements. Consider NATO's recent move to create multinational forces. The U.S. could participate at a lower level by contributing a brigade, rather than a larger division, as a complete force package. That would allow the U.S. to maintain its visibility and involvement without contributing a large portion of its combat power. (By 1995 one division will constitute about ten percent of the Army's total combat power, while a restructured brigade would be less than five percent).

The corps-brigade structure, although lacking validation in the formal sense, is being adopted by the Army of the Commonwealth of Independent States in its first "major reorganization . . since 1957."[65] The Army of the

CIS by 1995 will "undergo a major structural reorganization . . . switching from its current army/division/brigade . . . organization to new corps/brigade structures."[66] The Army is seeking "to establish the optimum organisational mix for independent and highly flexible operational-level activity."[67]

Two factors are driving this structural change: the successful 1987 reorganization of the Hungarian Army into a corps/brigade design, which proved the concept, and the CIS Army's recent "understanding of the [technological] nature of future war," gained as a result of its study of Operation Desert Storm.[68] Aiming to eliminate its old "ponderous" structure, the CIS will replace it with one that maximizes effectiveness and efficiency.[69] The CIS corps/brigade restructuring provides a good example of how technology can drive and shape force structure.

A corps/brigade structure also has applicability to and benefits for the reserve components of the Army. With the brigade as a smaller base unit, reserve units will be able to cover a smaller geographical area and still maintain their personnel strength. This is especially beneficial for Army Reserve units that typically extend across two or more states, since it will improve unit cohesion and training attendance. Additionally, reserve unit activations in time of crisis can be more selective, since a brigade can be activated as a complete package rather than as an incomplete component of a division.

That smaller is better also holds true when Army expansibility is considered. Common sense says that it will be easier and faster to form and train a brigade-sized unit than a division-sized unit. With reduced equipment and personnel requirements, a brigade can be filled, trained, and fielded more quickly, thus expanding the Army more rapidly than can be done

within current force structure. The result will be better trained, more responsive reserve units and a more readily expanded Army.

Finally, the corps/brigade concept optimizes the attributes that Michael Mazarr believes the future Army must possess. That Army must be:

- focused on warfighting, not deterrence
- made up of self-contained units not requiring augmentation
- dedicated to specific contingencies to the greatest degree possible while retaining flexibility through secondary roles and missions
- designed for sustained inland ground operations often requiring air-based power projection, leaving sea-based power projection to the Marines
- recognized as having forces with distinct, but differing limitations.[70]

To develop an Army with such attributes and given the opportunities provided by technology, restructuring the Army to eliminate the division command echelon is not just feasible, it is necessary. Today's corps commander has more capability and greater control of forces than ever before. The Army must exploit quickly the synergisms afforded by technology. But redesigning the Army's C2 structure is only the first change needed to increase the capabilities of the Army -- force composition must also be altered.

FORCE COMPOSITION

The second aspect of force structure, force composition, is defined as the types and numbers of units composing the Army. Since it determines overall force capability, composition determines how well, or even whether the Army can execute the tasks required by the national military strategy and its attendant employment concepts. With the recent adoption of crisis

response, the Army's tasks and missions have undergone significant change and reorientation. But beyond changing the numbers of heavy and light forces, the Army has done little to alter its composition in order to realize those newly defined requirements. Rather, it has clung to the all-purpose force concept. But with limited training time and resources, those forces will be "unlikely to perform well on any given mission."[71] The Army in 1995 will remain polarized between two forces -- light units that lack the tactical mobility and combat power needed to resolve most conflicts and heavy units that lack the strategic mobility to move anywhere quickly. Thus the Army will continue to suffer severe limitations in deployability, responsiveness, and versatility, trapped in what Jeffrey Record calls "the great paradox of the Rapid Deployment Force: Those U.S. ground forces most rapidly deployable overseas are least suited for combat against potential U.S. adversaries . . . [even though] staying on the battlefield is just as important as getting to it in time."[72]

But the tasks, missions, and desirable force qualities appropriate to the adoption of crisis response should profoundly affect force composition. With the increased emphasis on versatility, deployability, lethality and expansibility, the Army must metamorphose into a force that optimizes those qualities and thereby possesses the capabilities to overcome the unknown and unknowable adversaries of the future. To accomplish that goal, four changes are required in the Army's composition: improving light infantry capabilities; adding capability to and reshaping heavy forces; building and fielding middle-weight, or light armored forces; and optimizing the force mix of the three. However, before describing the specific changes needed to shape the future Army, a delineation of missions and tasks for each type of force is appropriate.

Missions and tasks should be assigned based on the specific capabilities of each force type -- light infantry, light armored, and heavy armored forces. Those missions and tasks must be defined more narrowly than in the past, although with some overlap between force types to ensure force continuity and versatility. William Kaufmann agrees that units must have an "inexorable orientation . . . to specific theaters and particular missions if they are to have any proficiency at all."[73] With each unit's missions focused more narrowly, they will be able to train to a shorter task list (especially in view of a brigade-based structure that is comprised of more combat units), thereby improving unit combat performance without sacrificing overall force versatility.

Light infantry, including airborne infantry, has significant limitations in combat power and tactical mobility that make it "arguably not well suited for any of the missions that spurred [its] formation."[74] Accordingly, light infantry in the future will have a very limited repertoire. The role of airborne infantry will not change. It will continue as the Army's forced entry capability with its employment in operations usually of limited duration. Pure light infantry, however, will have several very specific missions -- low intensity conflict (LIC)/counterinsurgency (CI) and mid- to high-intensity operations in "regions characterized by mountainous terrain, urban areas, tropic rain forest, and arctic climates."[75] Obviously, a light infantry brigade (LIB) cannot train for combat in all four of those widely varying regional possibilities. Each LIB would be assigned one region as its primary area of operations, with the others assigned as secondary or tertiary areas. Light infantry may, of course, be used in other capacities where heavier forces are more suited, but normally for short durations, such as initial expansion of lodgements after an airborne forced entry or as reinforcements of last resort.

Heavy armored forces missions will involve reinforcing the more rapidly deployable forces when they are deployed to regions that favor armor operations or when facing armor-heavy opponents. Light armored forces, on the other hand, will assume most of the missions now assigned to light infantry as the Army's rapid deployment force. Light armor will be used to counter, at least initially, every threat in the mid- to high intensity category, including world-wide rapid response to counter armored threats until heavier forces can arrive. Since capabilities dictate to a large extent what missions each force type should have, once missions are determined, then, each force type should be organized to maximize the requisite capabilities.

Today's light infantry consists of three types of units -- pure infantry, airborne infantry, and air assault infantry. Beyond being restructured into brigades, airborne infantry will remain essentially the same as it is today. Pure light infantry will undergo modifications to correct some of its inherent weaknesses. But air assault infantry must be deactivated, for it is too heavy to be effective in the evolving strategic environment. For deployment purposes, air assault infantry is as heavy as a heavy armored unit, but it lacks the fire power of a heavy unit. The amount of lift it would take to move two air assault brigades (with their divisional support slices) to a crisis area could also move a heavy armored brigade with its substantially greater combat power.[76] And, with its heavy structure, there is even less justification for air assault when it is used purely as light infantry. In the Army of 1995 only airborne and pure light infantry will exist.

Light infantry has been widely acknowledged as having severe employment limitations due to the lack of three essential capabilities -- tactical mobility, sustainability, and firepower.[77] Accordingly, light infantry

brigades, under the proposed restructuring concept, will be augmented to correct each of those shortcomings. The light infantry brigade structure is shown in figure 1.

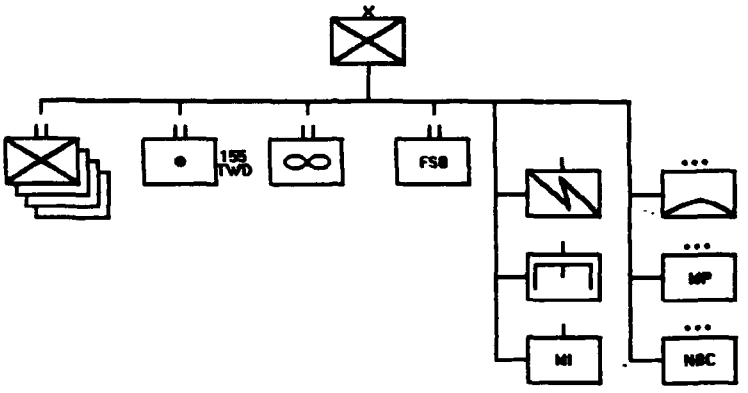

FIGURE 1.
LIGHT INFANTRY BRIGADE

Depicted are several changes from existing divisional brigades beyond the addition of divisional support units -- four light infantry battalions (to increase combat power and area coverage), an air defense platoon (most LIC and CI forces do not normally have large air forces; when required additional air defense will be provided by corps), and a battalion of towed 155mm artillery (to increase the firepower and range of the division). Not shown are changes that should be made within units to correct inherent problems, such as tactical mobility, with today's light infantry divisions (LIDs).

Tactical mobility has always been a problem for light infantry. The present LID's "integral tactical mobility . . . allows [it] to move less than a brigade at a time, rendering [it] ill-suited for any sort of maneuver

warfare."[78] But maneuver warfare may not be the only type of conflict that requires tactical mobility. During Operation Just Cause, for example, the 2d Brigade, 7th Infantry Division (Light) had to conduct search and clear operations in western Panama over distances exceeding 150 miles. The tactical mobility shortcoming can be corrected very simply -- by adding enhanced-load High-mobility Multipurpose Wheeled Vehicles (HMMWV) to every unit as organic equipment.

The light infantry brigade HMMWV's will have improved suspension (models already exist) enabling them to carry ten fully loaded soldiers, a squad equivalent. Additionally, the HMMWV's will be modified to provide overhead and side ballistic protection against variable-timed artillery and small arms fire. Of course, adding HMMWV's will increase sortie requirements when the units deploy, but in contingencies where mobility is not required the HMMWV's can be left behind. In contingencies where mobility is necessary, however, this configuration will greatly extend the range and increase the speed of movement for light units, enabling them to keep up in maneuver warfare.

When LIDs were designed, sustainability was sacrificed for 'lightness.' Currently LID's have sufficient organic logistic capability to sustain themselves unsupported for only 48 hours. In the LIB's, this will be increased to 96 hours by adding carrying capability to every unit including the Forward Support Battalion (FSB). While every area of logistic operations will be augmented to a degree in order to boost the LIB's staying power, emphasis will be placed on increasing the number of vehicles and adding small (1000 gallon) fuel tankers so each unit can carry its basic unit load of food, fuel, ammunition, and water and the FSB can provide more augmentation when required.

Finally, the firepower of light infantry must be increased. This will be accomplished primarily through artillery by replacing the towed 105 mm howitzer battalion with a light 155 mm battalion and by fielding the High Mobility Artillery Rocket System (HIMARS).[79] Already in development, both are designed and destined for light forces and will be towable by HMMWV. In addition to increased range and accuracy, these systems will also allow light forces to use the new munitions soon to be added to the field artillery's arsenal. Sensor-fuzed munitions like the Search and Destroy Armor Munition (SADARM) and the Wide-Area Mine (WAM) will provide light forces with an exponential increase in their anti-armor capabilities and as well reduce overall logistics requirements, since a single round, with its increased range, lethality, and footprint, is as effective as numerous conventional rounds.[80]

The changes in light infantry units outlined above make those forces more capable than ever before, with only a small increase in sortie requirements. They will still be rapidly deployable, but, within their newly defined mission areas, they will now be able to stay on the battlefield and win.

Heavy forces will remain the iron fist of the U.S. Army, providing speed, tactical agility, and shock power. These units do not require the number of changes that light forces do, but they do require one significant alteration. Heavy forces normally come in two types -- tank units and mechanized infantry units (purists may include cavalry as a third type, but, beyond mission differences, it is essentially a tank unit). In the brigade structure, tank brigades (or cavalry, depending on mission) would be the only heavy brigades. Mechanized infantry does not generate sufficient combat power to justify their formation into separate complete brigades.

The primary role of mechanized infantry is "helping to get tanks forward [and] . . . to maintain or restore the momentum of the advance when tanks are slowed down or halted."[81] Mechanized infantry is designed to be employed with tanks. A mechanized infantry brigade would require about the same lift and time to deploy to a crisis area as a tank brigade, but it provides much less total firepower.[82] Thus, while tank brigades will contain mechanized infantry battalions, there will be no mechanized infantry brigades as such.

Heavy armored brigades will be organized as depicted in figure 2.

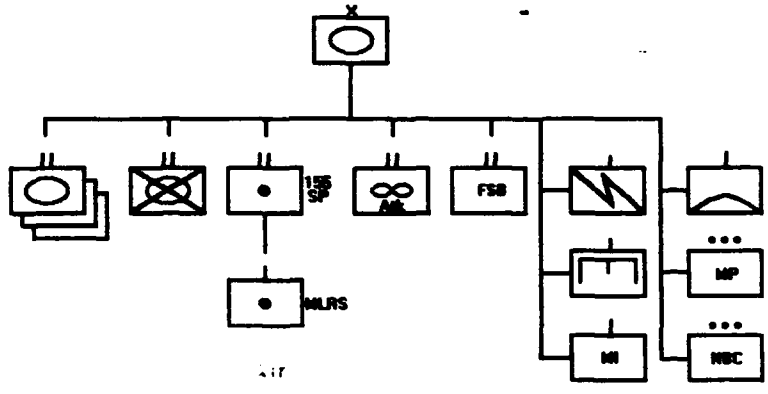

FIGURE 2.
HEAVY ARMORED BIRGADE

There are three additions beyond the inclusion of former divisional units: a third tank battalion, an MLRS battery (for added range and firepower), and a reinforced engineer company (to increase breaching capability). With these increases, once a heavy brigade arrives at a contingency location, it will be fully capable to inflict maximum destruction in minimum time.

Light armored forces are the most radical change proposed in this paper. But this is not a new issue or idea. Former Chief of Staff Edward C. Meyer proposed just such forces in 1980 when he observed that, "medium force packages for rapid deployment missions should be capable of rapid response worldwide and capable of countering initial armor threats until heavier force packages can reinforce."[83] Light armored units will be the 'heavy' end of the rapid deployment force, equipped and trained to fight armored forces, but light enough to get to a crisis site quickly. Indeed, the primary advantage of light armor is "provide[ing] a high degree of tactical mobility and firepower without imposing the penalty of strategic immobility associated with standard 40- to 60-ton main battle tanks (like the . . . [M1A1]) and 20- to 30-ton infantry fighting vehicles (like the [M2]).[84] The key to light armored forces, then, is that they be readily air-transportable, but still lethal and survivable against armored adversaries.

For these light armored forces, technology plays a critical role, since the key components -- light tanks, personnel carriers, and self-propelled artillery -- do not exist in the current Army inventory. Technology does exist, however, to build a tank that weighs less than 25 tons using the latest composite materials. Light personnel carriers and artillery are possible either through the use of similar materials or by modifying off-the-shelf equipment like the German Weisel armored vehicle, which weighs only 4.5 tons.[85] All of these vehicles will be lighter than their heavy counterparts, but they will also be smaller, increasing their survivability. Designed properly, they should fit inside a C-141.

Additionally, all light armored vehicles will be wheeled similar to the Marine Corps' Light Armored Vehicle (LAV). Wheels permit long range tactical mobility, a considerable advantage over tracked vehicles which

require heavy equipment transport (HET) for movement over longer distances. The situation of Operation Desert Storm, where ports of entry were dozens or hundreds of miles from the crisis area, may not be unusual. In such circumstances, tracked vehicles will have to wait in line for transport, delaying their employment and possibly affecting the outcome of any conflict. Wheeled vehicles, on the other hand, will be able to move on their own immediately upon arrival. Since light armored forces are designed to be the first or nearly the first forces at a crisis location, the ability to move long distance on their own allows earlier commitment of those forces during the critical first stages of a crisis.

There are, however, some trade-offs when considering light versus heavy armor. Lighter materials will not offer crew protection equivalent to heavier armor, but they will afford much greater fuel efficiency, perhaps by a factor of ten. The fuel factor alone has huge significance for sustainability, since fuel is the primary constraint in armor operations.

Trade-offs are also evident when considering wheels over tracks. Wheels are more vulnerable than tracks, since they can be punctured by fire or debris. And, while multiple flats can immobilize a vehicle, technological innovation can design tires that resist puncture and suspension systems that continue to function with multiple flats. Additionally, as demonstrated by the Marines during Desert Storm, wheeled armor has nearly the same cross-country mobility as tracked armor. The only significant difference is in scaling obstacles, such as walls or ditches, unassisted -- wheels cannot climb or traverse the heights or widths that tracks can. Overall, however, technology-based mobility advances and greater fuel efficiency argue that wheels are the logical choice for light armored forces.

Additional firepower and tank-killing capabilities will come from other technologically advanced weapons and munitions. In addition to the light 155 mm howitzer, HIMARS, SADARM, and WAM, the Line Of Sight Anti-Tank (LOSAT) system will greatly increase anti-armor firepower. The LOSAT fires a hyper-velocity, fire-and-forget missile that can penetrate any known armor (especially any Third World armor) at ranges over 4000 meters. Additionally, LOSAT has the capability of firing and tracking multiple missiles simultaneously. With these systems combined in a single unit, one might argue convincingly that the day has arrived "when advanced missiles and other technologies [have] render[ed] heavy armor obsolete," at least for our adversaries.[86]

Although light armored brigades cannot be fielded in the near future, their organization is easy to discern, as depicted in figure 3.

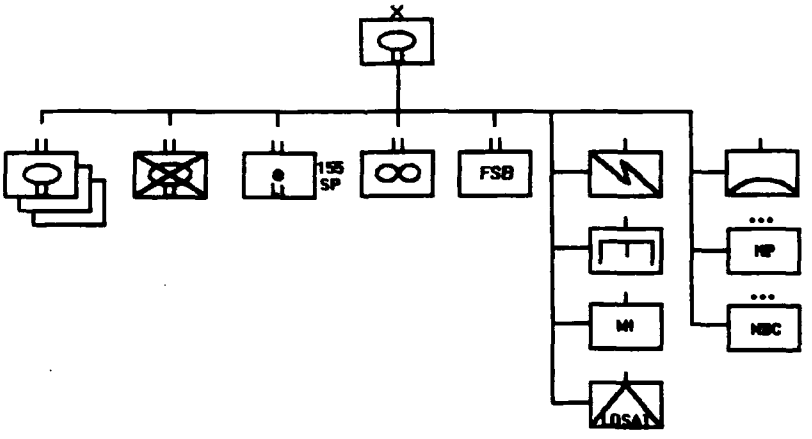

FIGURE 3.
LIGHT ARMORED BRIGADE

Like heavy units, light armored brigades will contain three light tank battalions and one light mechanized infantry battalion. Additionally, they will contain an additional anti-tank company equipped with LOSAT. This brigade organization will provide the combination of versatility, deployability, lethality, and flexibility missing from heavier and lighter forces. For these reasons light armor will be the force of the future -- one that the Army must support immediately and completely.

There are three final considerations that impact force composition -- the numbers or proportions of each type of unit in the Army, the corps affiliations of those units, and the unit basing scheme. As currently projected, the Army in 1995 will contain six heavy and six light divisions, twelve divisions total. Using the divisions-to-restructured brigades ratio of 2:1 presented earlier, twelve divisions would translate into roughly 24 brigades.

The most pragmatic approach in determining the number of brigades of each type is to examine the corps to which those brigades will be assigned. First is the XVIII Airborne Corps -- the Contingency Corps. With its mission to respond rapidly worldwide to many possible threats and environments, it needs the largest and most versatile force and therefore should be assigned eleven brigades -- two airborne infantry brigades, three light infantry brigades, and six light armored brigades. This corps will have no heavy brigades, since those units' mission is strictly reinforcing.

Figure 4. depicts XVIII Airborne Corps as it should be restructured under this proposal:

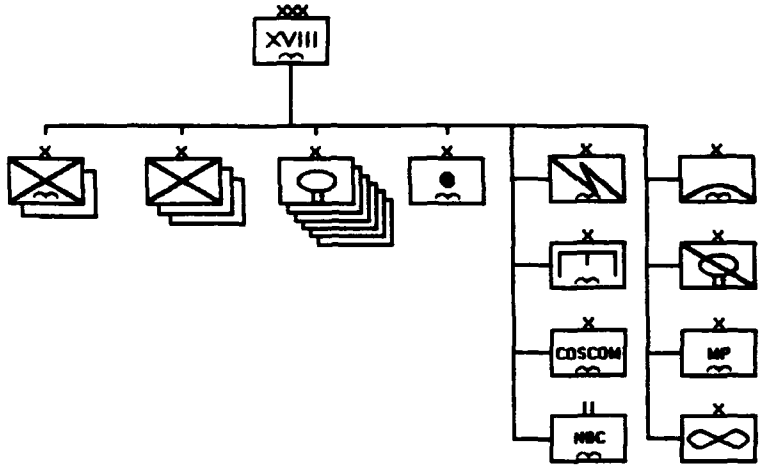

FIGURE 4.
CORPS STRUCTURE

Second, V Corps in Germany has two missions -- to maintain a presence in Europe and to reinforce other contingencies as required. For those missions it should be assigned three heavy brigades and one light armored brigade. Next, III Corps in CONUS has a mission is to reinforce XVIII Airborne Corps when necessary. It will have more time than XVIII Corps to respond to crises; therefore, it needs only a small rapid deployment capability. It should be assigned four heavy brigades and two light armored brigades. Last is I Corps, also in CONUS, which has the mission of reinforcing in the Pacific area of operations in conjunction with or instead of III Corps and of maintaining forward presence in Korea. For that it should be assigned one heavy and two light armored brigades. These assignments total out to two airborne infantry brigades, three light infantry brigades, eight heavy armored brigades and eleven light armored brigades -- a grand total of 24 brigades.

Figure 5. below provides a recap of unit assignments by corps.

	XVIII Corps	V Corps	III Corps	I Corps
Brigade Type				
Airborne Inf	2			
Light Infantry	3			
Light Armored	6	1	2	2
Heavy Armored		3	4	1
Totals	11	4	6	3

Figure 5. Brigade Affiliations

Brigades should be based on common sense and pragmatism. Those units slated for rapid deployment should be based on or near Air Force bases, while those slated for rapid reinforcement should live near seaports. Also requiring consideration when determining a basing scheme, however, are the missions of each unit. In keeping with the previously stated intention of assigning each brigade a primary mission, that mission should enter into the basing equation. For example, a brigade that has a primary mission of LIC in jungle or tropical climates should not be based at Ft. Lewis, WA. Similarly, a heavy unit designated for rapid reinforcement worldwide should not be based in Kansas, as far as possible from seaports. Finally, basing units as a part of forward presence should accomplish two purposes: it

should reinforce our commitment to and influence with our allies, and it should position US forces closer to potential trouble spots. In keeping with those two tenets, the US should maintain a presence in NATO, but should consider moving at least some of those forces into the southern flank areas, possibly Italy, Greece, or Turkey. In one of those nations US forces would be closer to probable conflict areas and thus able to respond to crises more quickly. But specific basing assignment recommendations are beyond the theoretical scope of this paper. They are better left to the experts. The considerations discussed here, however, should be significant determinants in future basing decisions.

CONCLUSION

The Army today has an historic opportunity to change its direction and its future. Technology presents endless possibilities to design and build a future force that has capabilities far beyond what today is even imaginable. Building that force requires vision, initiative, risk-taking, and determination. The force proposed in this paper will require a large initial investment as new armored systems are designed and fielded. In the long run, however, such an investment will prove its worth many times over. But the force structure envisioned by this paper is only the first step, one that attempts to exploit the possibilities of technology within the framework of flexible response. The Army's leadership should take that first step, and advocate a credible and capable force for the future -- one that can deal effectively both with uncertainty and downsizing.

ENDNOTES

[1]U.S. President, National Security Strategy of the United States (Washington, D.C.: The White House) George Bush, August 1991, 1.

[2]In order to limit this paper's scope I have chosen to exclude special operations forces (SOF) from consideration. The objective of this paper is to suggest a force structure that can meet the requirements of crisis response in the context of the evolving geostrategic environment. SOF, not designed to conduct sustained combat against regular forces, does not figure into that structure within the framework of this paper.

[3]Robert A. Fitton, ed., Leadership: Quotations from the Military Tradition (Boulder, CO: Westview Press, 1990), 71.

[4]Mackubin Thomas Owens, "Force Planning in an Era of Uncertainty," Strategic Review (Spring 1990): 10.

[5]Donald E. Nuechterlein, America Overcommitted: United States National Interests in the 1980's (Lexington, KY: The University Press of Kentucky, 1985), 7.

[6]U.S. President, 3.

[7]Ibid.

[8]Colin S. Gray, War, Peace, and Victory (New York: Simon and Schuster, 1990), 83.

[9]David Jablonsky, Elements of Power, Vol 1 Course 2: War, National Policy, and Strategy (Carlisle Barracks, PA: US Army War College, 1991), 30.

[10]Donald M. Snow, "International Security Issues," Lecture at U.S. Army War College, Carlisle Barracks, PA, 28 January 1992.

[11]Robert Jervis, "The Future of World Politics," International Security 16 (Winter 1991/92): 41.

[12]Ibid., 62.

[13]M. Freitag, "Army and Defense Resource Management Issues," Lecture at U.S. Army War College, Carlisle Barracks, PA, 30 January 1992.

[14]Susan V. Lawrence, "More muscle, longer reach," U.S. News & World Report, 9 March 1992, 38-39.

[15]Jervis, 59.

[16]U.S. President, v.

[17]Ibid., 7.

[18]Donald M. Snow, National Security: Enduring Problems in a Changing Defense Environment (New York: St. Martin's Press, 1991), 20.

[19]Ibid.

[20]Ibid.

[21]U.S. President, 6.

[22]Department of Defense, Joint Publication 1-02, Department of Defense Dictionary of Military and Associated Terms ([Washington, D.C.]: The Joint Chiefs of Staff, 1 December 1989), 231.

[23]Carl E. Vuono, "National Strategy and the Army of the 1990's," Parameters 21 (Summer 1991): 4-5.

[24]U.S. President, 5.

[25]Ibid., 25.

[26]S. J. Deitchman, Beyond the Thaw: A New National Security Strategy (Boulder, CO: Westview Press, 1991), 100.

[27]U.S. President, 25.

[28]Richard Cheney, Conflicting Trends and Long Term Defense Needs, Vol 3 Course 2: War, National Policy, and Strategy, (Carlisle Barracks, PA: U.S. Army War College, 1991), 134.

[29]Vuono, 5.

[30]Department of Defense, 1991 Joint Military Net Assessment ([Washington, D.C.]: U.S. Department of Defense, 1991), 1-5.

[31]Cheney, 142.

[32]Vuono, 5.

[33]Ibid.

[34]U.S. President, 28-29.

[35]Vuono, 11.

[36]Lewis I. Jeffries, "A Blueprint for Force Design," Military Review 71 (August 1991): 28.

[37]Carl E. Vuono, "Desert Storm and the Future of Conventional Forces," Foreign Affairs 70 (Spring 1991): 58.

[38]Vuono, "National Strategy", 10.

[39]U.S.President, 31.

[40]Department of Defense, Department of the Army, Army Focus, James E. Nyberg, ed., (Washington, D.C.: U.S.Army Publications and Printing Command, 1991), 8.

[41]Bernard Adelsberger, "Army takes fast track to contingency force," Army Times, February 10, 1992, 6.

[42]Robert L. Pfaltzgraff, Jr., "The Emerging Global Security Environment," Annals 517 (September 1991): 24.

[43]Department of Defense, Department of the Army, TRADOC Pam 525-5, AirLand Operations ([Fort Monroe, VA]: U.S. Army Training and Doctrine Command, 1 August 1991), 10.

[44]Martin van Creveld, Technology and War, (London: Brassey's (UK), 1991), 311-316.

[45]Alvin and Heidi Toffler, "War, Wealth, and a New Era in History'" World Monitor 4 (March 1991): 50.

[46]Mary C. Fitzgerald, "The Soviet Image of Future War: 'Through the Prism of the Persian Gulf'," Comparative Strategy 10 (1991): 393.

[47]Mary C. Fitzgerald, "The Soviet Military and the New 'Technological Operation' in the Gulf," Naval War College Review 44 (Autumn 1991): 39.

[48]Ravinderpal Singh, "Trans-Century Technologies," Strategic Analysis 14 (July 1991):441.

[49]Department of Defense, Department of the Army, Army Echelons Enabling Concept (DRAFT) ([Fort Leavenworth, KS]: US Army Combined Arms Command, 1 October 1991), 2.

[50]Department of Defense, Department of the Army, FM 100-5, Operations ([Fort Monroe, VA]: US Army Training and Doctrine Command, 5 May 1986), 22.

[51]Robert B. Killebrew, "Force Projection in Short Wars," Military Review 71 (March 1991): 30.

[52]Department of Defense, Department of the Army, "AirLand Battle Management Program" ([Aberdeen Proving Ground, MD]: U.S. Army Laboratory Command, undated).

[53]Department of Defense, Department of the Army, "Distributed Command and Control Lower Echelon" ([Fort Monmouth, NJ]: U.S. Army Communications-Electronics Command, 12 March 1990).

[54]Jeffries, 30.

[55]Kenneth T. Sawyer, A Universal Division, (Carlisle Barracks, PA: US Army War College, 1960), 34.

[56]Dr. Richard Christ, Army Research Institute, Fort Bliss, TX, interview by author, telephone, Carlisle Barracks, PA, 28 January 1992.

[57]John G. Roos, "Post-Cold War Realities Take Big Bite Out of NATO," Armed Forces Journal International, 129 (December 1991): 20.

[58]Stephen Silvasy, Jr., "Airland Battle Future: The Tactical Battlefield," Military Review 71 (February 1991): 10-11.

[59]Michael J. Mazarr, Light Forces & the Future of U.S. Military Strategy, (Washington, D.C.: Brassey's (US), Inc, 1990), 44-51.

[60]William W. Kaufmann, Planning Conventional Forces, 1950-80, (Washington, D.C.: The Brookings Institution, 1982), 22.

[61][redacted], 22-23.

[62][redacted], 22.

[63][redacted], 52.

[64]The increased probability of success results from three inherent advantages that a brigade-based structure has over a division-based one: brigades can tailor more precisely to the mission and threat; they can deploy their CS/CSS units earlier; and, they can deploy rapidly substantially greater combat power (in the case of a light armored brigade). Getting more combat power to a crisis area earlier with its sustainment forces will increase the probabilities for successful and expeditious mission accomplishment.

[65]"Red Hot News," Armed Forces Journal International 129 (January 1992): 15.

[66]Ibid.

[67]R.H. Pepper and P. Leonard, "A Soviet New Model Army?," International Defense Review 22 (3/1989): 260.

[68]Ibid.

[69]Ibid., 261.

[70]Mazarr, 60.

[71]Kaufmann, 22.

[72]Jeffrey Record, The Rapid Deployment Force and U.S. Military Intervention in the Persian Gulf, (Cambridge, MA: Institute for Foreign Policy Analysis, Inc., 1983), 24-26.

[73]Kaufmann, 25.

[74]Mazarr, 39.

[75]Department of Defense, Department of the Army, White Paper 1980: A Framework for Molding the Army of the 1980s into a Disciplined, Well-Trained Fighting Force, by General Edward C. Meyer, 4 (Washington, D.C.: The Chief of Staff, 25 February 1980).

[76]Department of Defense, Deployment Planning Guide, ([Newport News, VA]: Military Traffic Management Command, August 1991): C-3 & C-10. Two air assault brigades (with support slices) require about 3.9 Fast Sealift Ships (FSS) for transport to a crisis area. A heavy armored brigade (as proposed in this paper) requires about 3.2 FSS. This comparison is equally true for deployment by air (except that an armored brigade requires substantially more C-5 sorties), but using such deployment means for either type of unit is generally considered impractical. A firepower comparison is also lopsided: two air assault brigades have two attack helicopter battalions, two 105 mm howitzer (towed) battalions, plus the normal array of light infantry weapons. One heavy armored brigade will have one attack helicopter battalion, one 155 mm self-propelled howitzer battalion, a battery of MLRS, three tank battalions, and one mechanized infantry battalion with Bradley fighting vehicles.

[77]Mazarr, 106.

[78]Ibid., 81.

[79]Department of Defense, Department of the Army, Army Technology Base Master Plan, ([Washington, D.C.]: Deputy Assistant Secretary of the Army for Research and Technology, November 1990): II-59 - II-61.

[80]Edward H. Josephson and Raymond M. Macedonia, "Enhancing Total Combat Power with Fewer Forces," Annals 517 (September 1991): 182-183.

[81]Richard E. Simpkin, Mechanized Infantry, Oxford: Brassey's Publishers Limited, 1980), 48.

[82]Department of Defense, Deployment Planning Guide, C-5 & C-8.

[83]Department of Defense, White Paper 1980, 4.

[84]Record, 75.

[85]Dr. Charles H. Church, Director, Advanced Concepts and Technology Assessment, Office of the Assistant Secretary of the Army for Research, Development, and Acquisition, interview by author, Notes, The Pentagon, Washington, D.C., 21 November 1991.

[86]Mazarr, 9.

BIBLIOGRAPHY

Besch, Edwin W. "Are Our Light Divisions Too Light?" Army 35 (February 1985): 42-48.

Bolger, Daniel P. "Command or Control?" Military Review 70 (July 1990): 69-79.

Cheney, Richard. Conflicting Trends and Long Term Defense Needs. Vol. 3, Course 2: War, National Policy, and Strategy. Carlisle Barracks, PA: U.S. Army War College, 1991.

Christ, Richard, Chief, Army Research Institute, Ft. Bliss, TX. Interview by author, 28 January 1992, Carlisle Barracks, PA. Telephone. U.S. Army War College, Carlisle Barracks, PA.

Church, Charles H., Director, Advanced Concepts and Technology Assessment, Office of the Assistant Secretary of the Army for Research, Development, and Acquisition. Interview by author, 21 November 1991, The Pentagon, Washington, D.C. Notes.

Deitchman, S.J. Beyond the Thaw: A New National Strategy. Boulder, CO: Westview Press, 1991.

Fitton, Robert A., ed. Leadership: Quotations from the Military Tradition. Boulder, CO: Westview Press, 1990.

Fitzgerald, Mary C. "The Soviet Image of Future War: 'Through the Prism of the Persian Gulf.'" Comparative Strategy 10 (1991): 393-430.

_____. "The Soviet Military and the New 'Technological Operation' in the Gulf." Naval War College Review 44 (Autumn 1991): 16-44.

Freitag, [redacted] "Army and Defense Resource Management Issues." Lecture at U.S. Army War College, Carlisle Barracks, PA., 30 January 1992.

Gray, Colin S. War, Peace, and Victory: Strategy and Statecraft for the Next Century. New York: Simon and Schuster, 1990.

Jablonsky, David. Elements of Power. Vol 1, Course 2: War, National Policy, and Strategy. Carlisle Barracks, PA: U.S. Army War College, 1991.

Jeffries, Lewis I. "A Blueprint for Force Design." Military Review 71 (August 1991): 20-31.

Jervis, Robert. "The Future of World Politics." International Security 16 (Winter 1991/92): 39-73.

Josephson, Edward H., and Raymond M. Macedonia. "Enhancing Total Combat Power with Fewer Forces." Annals 517 (September 1991): 174-92.

Kaufmann, William W. Planning Conventional Forces 1950-80. Washington, D.C.: The Brookings Institution, 1982.

Killebrew, Robert B. "Force Projection in Short Wars." Military Review 71 (March 1991): 28-37.

Lawrence, Susan V. "More muscle, longer reach." U.S. News & World Report, 9 March 1992, 38-9.

Libbey, Miles A. III, and Patrick A. Putignano. "See Deep -- Shoot Deep." Military Review 71 (February 1991): 38-47.

Mazarr, Michael J. Light Forces & the Future of U.S. Military Strategy. Washington, D.C.: Brassey's (US), Inc, 1990.

_____. "Middleweight Forces for Contingency Operations." Military Review 71 (August 1991): 32-39.

Nuechterlein, Donald E. America Overcommitted: United States National Interests in the 1980s. Lexington, KY: The University Press of Kentucky, 1985.

Olson, William J. "The Light Force Initiative." Military Review 65 (June 1985): 2-17.

Ostovich, Rudolph III "Army Aviation in AirLand Battle Future." Military Review 71 (February 1991): 25-29.

Owens, Mackubin Thomas. "Force Planning in an Era of Uncertainty." Strategic Review 18 (Spring 1990): 9-22.

Pfaltzgraff, Robert L., Jr. "The Emerging Global Security Environment." Annals 517 (September 1991): 10-24.

Paschall, Rod. LIC 2010: Special Operations & Unconventional Warfare in the Next Century. Washington, D.C.: Brassey's (US), Inc., 1990.

Pepper, R.H. and P. Leonard. "A Soviet New Model Army? Future brigade and corps structures." International Defense Review 22 (3/1989): 259-63.

Record, Jeffrey. The Rapid Deployment Force and U.S. Military Intervention in the Persian Gulf. Cambridge, MA: Institute for Foreign Policy Analysis, 1983.

_____. "The U.S. Army in the Post-Cold War Era." Strategic Review 19 (Summer 1991): 75-81.

"Red Hot News." Armed Forces Journal International, January 1992, 15.

Roos, John G. "New Army-Air Force War-Fighting Concept Sees Joint Power Projection Operations." Armed Forces Journal International 129 (October 1991): 12-14.

_____. "Post-Cold War Realities Take Big Bite Out of NATO." Armed Forces Journal International 129 (December 1991): 17-20.

Roper, John. "Shaping Strategy without the Threat." Adelphi Paper 257 (Winter 1990/91): 76-83.

Sawyer, Kenneth T. A Universal Division. Carlisle Barracks, PA: U.S. Army War College, 1960.

Silvasy, Stephen Jr. "AirLand Battle Future: The Tactical Battlefield." Military Review 71 (February 1991): 2-12.

Simpkin, Richard E. Mechanized Infantry. Oxford: Brassey's Publishers Limited, 1980.

Singh, [redacted]pal. "Trans-Century Technologies." Strategic Analysis 14 (J[redacted]1991): 441-56.

Snow, Donald M. "International Security Issues." Lecture at U.S. Army War College, Carlisle Barracks, PA, 28 January 1992.

_____. National Security: Enduring Problems in a Changing Defense Environment. New York: St. Martin's Press, 1991.

Stouder, Richard L. "AirLand Operations: Are Unit Changes Needed?" Military Review 71(October 1991): 72-77.

Sullivan, Gordon R. "An Exclusive AFJI Interview with: General Gordon R. Sullivan, Chief of Staff, United States Army." Interview by LuAnne K. Levens and Benjamin F. Schemmer. Armed Forces Journal International, 129 (October 1991): 54-9.

Thies, Wallace J. "A Twenty-First Century Army." Parameters 21(Spring 1991): 62-76.

Tiffany, Allen L. "A 'Light' Infantry Division With More for the Fight." Military Review 71 (August 1991): 40-55.

Toffler, Alvin and Heidi. "War, Wealth, and a New Era in History." World Monitor 4 (March 1991): 46-52.

U.S. Department of Defense. 1991 Joint Military Net Assessment. [Washington, D.C.]: The Joint Chiefs of Staff, 1991.

U.S. Department of Defense. Deployment Planning Guide. [Newport News, VA]: Military Traffic Management Command, 1991.

U.S. Department of Defense. Joint Publication 1-02, Department of Defense Dictionary of Military and Associated Terms. [Washington, D.C.]: The Joint Chiefs of Staff, 1989.

U.S. Department of Defense. Department of the Army. "AirLand Battle Management Program." [Aberdeen Proving Ground, MD]: U.S. Army Laboratory Command, undated.

U.S. Department of Defense. Department of the Army. Army Echelons Enabling Concept (DRAFT). [Fort Leavenworth, KS]: U.S. Army Combined Arms Command, 1991.

U.S. Department of Defense. Army Focus, James E. Nyberg, ed. Washington, D.C.: U.S. Army Publications and Printing Command, 1991.

U.S. Department of Defense. Department of the Army. Army Technology Base Master Plan. [Washington, D.C.]: Deputy Assistant Secretary of the Army for Research and Technology, 1990.

U.S. Department of Defense. Department of the Army. "Distributed Command and Control Lower Echelon." [Fort Monmouth, NJ]: U.S. Army Communications-Electronics Command, 1990.

U.S. Department of Defense. Department of the Army. Field Manual (FM) 100-5, Operations. [Fort Monroe, VA]: U.S. Army Training and Doctrine Command, 1986.

U.S. Department of Defense. Department of the Army. TRADOC Pam 525-5, AirLand Operations. [Fort Monroe, VA]: U.S. Army Training and Doctrine Command, 1991.

U.S. Department of Defense. Department of the Army. White Paper 1980: A Framework for Molding the Army of the 1980s into a Disciplined, Well-Trained Fighting Force, by Edward C. Meyer, Washington, D.C.: U.S. Government Printing Office, 1980.

U.S. President. National Security Strategy of the United States. Washington, D.C.: The White House. George Bush, 1991.

van Creveld, Martin. Command in War. Cambridge, MA: Harvard University Press, 1985.

_____. Technology and War: From 2000 B.C. to the Present. London: Brassey's (UK), 1991.

Vuono, Carl E. "Desert Storm and the Future of Conventional Forces." Foreign Affairs 70 (Spring 1991): 49-68.

_____. "National Strategy and the Army of the 1990s." Parameters 21 (Summer 1991): 2-12.

Waltz, Kenneth N. "A Strategy for the Rapid Deployment Force." International Security 5 (Spring 1981): 49-73.